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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,166	11/25/2003	Guang-Nan Tzeng	AITP0003USA	1165
27765	7590	01/04/2006	EXAMINER	
NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION P.O. BOX 506 MERRIFIELD, VA 22116			NGUYEN, MATTHEW VAN	
			ART UNIT	PAPER NUMBER
			2838	

DATE MAILED: 01/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/707,166

Applicant(s)

TZENG ET AL.

Examiner

MATTHEW V. NGUYEN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13-20 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. The Applicant's Amendment dated 10/26/05 have been entered and carefully considered. Claims 7-12, 14, 15, 18 and 19 have been amended. Limitations of claims 12 is allowable over prior art. However, arguments regarding the rejection 35 U.S.C. 102(e) to claims 1-10 and 13-19, and the rejection 35 U.S.C. 103(a) to claims 11 and 20 have not been found to be persuasive. Therefore, these claims are rejected under the same ground of rejection as set forth in the Office Action mailed 9/20/05.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-10 and 13-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Van Auken (U.S. Pat. No. 6,577,110).

With regard to claims 1-10 and 13-19, Van Auken (i.e., Fig. 1A) shows a method of reducing a ripple of the output voltage in a pulse frequency modulated (PFM) voltage regulator of converting a DC voltage source (V_{cc}) to an output voltage (V_o) including an inductor (40) coupled to the DC voltage source, and a capacitor (46) providing the output voltage having a terminal coupled to the inductor, comprising using a PFM switching signal (CHG) for converting the DC voltage source to the output voltage, detecting the output voltage (Voltage Divider

Network 19), reducing a duty cycle of PFW switching signal when the output voltage is lower than a predetermined target voltage, which is a DC component of the output voltage, by prolonging a predetermined off-time of the PFM switching signal (a period of delivering energy from the inductor to the capacitor); or by shortening a predetermined on-time of the PFM switching signal (a period of storing energy in the inductor), in accordance and along with an increase of the absolute difference between the output voltage and the predetermined target value (col. 3, line 51 – col. 4, line 53).

Applicant has argued that the duty cycle of the PFW switching signal in the claims of the instant application is reduced in response to the output voltage, whereas in Van Auken, that is based on the inductor current. That is not quite true, because the duty cycle of the PFW switching signal in Van Auken is also reduced in response to the output voltage via the statement "V_{low} represents the result of the comparison of the magnitude of the load voltage V_o and the predetermined reference voltage. During CCM operation, V_{low} is true (logic HI or logic 1) when the load voltage V_o is less than the predetermined reference voltage" (col. 4, lines 62-66).

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Auken in view of Yamada et al. (U.S. Pat. No. 6,714,425).

With regard to claims 11 and 20, Van Auken shows a method of reducing a ripple of the output voltage in a pulse frequency modulated (PFM) voltage regulator of converting a DC voltage source (V_{cc}) to an output voltage (V_o) comprising all the claimed subject matter as discussed above, except for the voltage regulator being operated in a heavy loading condition.

Yamada et al. discloses a voltage switching regulator (i.e., Figs. 1, 2) in which a ripple at the output voltage is reduced under a heavy load (abstract).

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to utilize the operation in a heavy load condition as shown in Yamada et al. into the voltage regulator of Van Auken for the purpose of giving the voltage regulator an ability of working with a heavy load.

Applicant has no specific argument regarding the rejection above, except for claims 11 and 20 being dependent on claims 1 and 17. However, as discussed above in subparagraph 2, claims 1 and 17 are not found patentable over prior art of Van Auken, thus, claims 11 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Auken in view of Yamada et al. as reasoning above.

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4. Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

None of prior art of record taken alone or in combination shows the PFM switching signal turning on a power switch transistor during an ON-time and turning off the power switch transistor during an OFF-time, in which the ON-time is shorter than or equal to a predetermined constant ON-time and the OFF-time is longer than or equal to a predetermined minimum OFF-time.

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Matthew V. Nguyen whose telephone number is (571)

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272-2081.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-2800.

Matthew V. Nguyen
MATTHEW V. NGUYEN
PRIMARY EXAMINER